

Ants are familiar creatures in almost every part of the world. They plague housewives the world over, sting picnickers, and serve moralists as examples of industry and thrift. An entomologist could doubtless write many books about the ants of Brazil; but I hope to tell a few things about them that will be of interest to North American readers.

Certainly they are sufficiently abundant! In the tropics, with no winter to hold back their development, they keep up unceasing activity, and are to be found everywhere, in an endless variety of size, form and color, all the way from tiny ones that can scarcely be seen to the great formigão, more than an inch in length. In Brazil ants are a serious menace to agriculture. Strawberries have never been grown successfully in Pernambuco because there is one kind of ant that eats the leaves, and another that eats the fruit, if the plant ever succeeds in bearing any fruit. But not merely strawberries --- a great many plants are subject to the ravages of ants; and there is a colossal fortune awaiting the man who discovers a really satisfactory way of getting rid of them. For the great plague of Brazilian agriculture is the sauva, or leaf cutting ant.

The sauva (oecodoma cephalotes)/^{pronounced sa-oo'-va, also written sauba} probably exists in several varieties, but certainly two are common in Pernambuco --- the small kind, about one fourth of an inch in length, called boca de ninho (nest mouth) because they have the custom of erecting a sort of chimney, about an inch in height, at the mouth of their burrow, made of bits of straw, woven together in a form somewhat resembling a bird's nest; and the large kind, the proper sauva, two or three times as large, and living in much larger colonies. The little ones plague gardeners, especially by attacking the tender seedling plants, and generally working havoc in a small way; but the destructive power of the large ones is something truly frightful. Both kinds by their passing beat a regular path, or series of paths in various directions from their burrow. The path made by the small

ones is no wider than a pencil, while the large ones often make well beaten paths five or six inches wide, perfectly clean and free from trash, winding for long distances through the undergrowth. They do their work principally at night, but may often be seen in the daytime, marching along, resembling nothing so much as an army marching and carrying flags -- each ant carrying aloft his bit of leaf as he returns to the den. The large sauvas often carry pieces of leaf an inch square or more. One may easily imagine what destruction can be wrought on plants by a colony of thousands of these large ants.

It is interesting to watch them work. Some have extra large jaws, and do the cutting of the leaves, while the others merely carry the pieces. I do not know whether the cutters are a specialized form, or are the older ants; but the difference is quite marked. And if the leaves are being taken from a shrub or tree, these cutters climb up to their place of work, and cut off the pieces, which fall to the ground, where they are carried away by the carriers. The cutter does not seem to concern himself much about "sawing off the limb behind him". Very often the cutter finds himself on the piece which has been severed from the leaf, and when that happens he rides it down, like a parachute, to the ground. Perhaps they do it purposely, for fun.

Once there was a large colony of sauvas on the school campus, but as they were not attacking anything of importance I had not yet got around to the task of destroying them. One day they decided to attack one of our eucalyptus trees -- a tree about ten inches in diameter at the base, and perhaps forty feet tall. In one night they destroyed about half the leaves on it, and when I saw them in the morning the cut leaves were falling in a constant shower. I had heard of a plan to stop this, and in the heat of the day, while the ants were not working, I had one of the workmen dig a hole, right in their path, just large enough to contain neatly a five gallon gasoline can. The can was set in with the edge flush with the surface, and all made smooth, and the ants, as expected, walked right over the edge and down into the can, whence they could not climb out, as the bright new tin was too slick to give them a foot hold. In the morning I had the can almost half full of ants, which I killed with a little kerosene. That stopped their ravages for a time, and I afterward made a frontal

attack on the colony, and exterminated it.

But they are not easy to exterminate. A number of methods have been used, but perhaps the most generally satisfactory for a large formigueiro ("ant" in Latin is formica, in Portuguese is formiga, and an ant colony is a formigueiro) is to use a device with a bellows for blowing smoke into the hole. The smoke comes from a container filled with burning charcoal and a mixture of sulphur and arsenic, or other poisonous substance. It takes hours of work, as the hole usually has numbers of outlets, and the bellows must be blown until the smoke appears at another outlet, then that must be stopped up, and the work continued, until no more outlets are found, and then kept up until the poison or the patience of the worker is exhausted, or both, and then the main entrance is stopped up, and the smoke left to do its work. It sounds formidable, but almost always several such applications are necessary to exterminate a colony. And besides being hard work, it is disagreeable, or even dangerous, and the workmen seek any excuse to get out of it. There are other poisons, one put up in benzine, which is poured into the hole and ignited, releasing poisonous fumes, and a cyanide preparation which is dissolved in water and poured into the hole. But these are rather expensive to use, especially for a large formigueiro. I have used them often on the small variety, where smoke is not effective, as the hole, being small, generally gets stopped up so that the smoke does not get in properly.

Someone will say, Why not put poison on the leaves? But that is the odd part of it. The sauva doesn't EAT the leaves. The leaves are carried down into the burrow, and piled up there to decay, and in this decaying leaf mass a certain fungus grows, and that is what the ants eat. For that reason poison put on the leaves has no effect on the ants. And the queens, in their migrating flight to start a new colony, carry with them, consciously or unconsciously, the spores of this fungus, so as to start the process off again in the new colony.

One would think that under these circumstances all leaves would be alike to the Sauvas, but it is not so. For some reason that I can not fathom, some leaves are sought after, and others rejected. They do not ordinarily attack corn or sugar cane,

and the common variety of beans is not usually bothered much. They are fond of almost all garden vegetables, and the leaves of citrus fruits, and they must have some appreciation of quality, for any new, imported variety of any plant they never miss. They dote on strawberry leaves, but their special delicacy is rose leaves. Because of this rose bushes, and other delicate plants, are usually planted with carqueiros. A carqueiro is made of clay, baked but not glazed, and resembles a large soup plate with a cup or porringer set in the middle of it, (really made all in one piece, of course) and a hole about three inches in diameter through the center of cup and plate. When the little plant is set out, this carqueiro is set over it, so that the plant grows up through the central aperture, and the soil is banked around this earthenware vessel, and the outside part filled with water, so that it looks like the cup sitting in the plate, and the plate filled with water. Thus the ants can not reach the stem of the plant without crossing the water, and this they will not do. But of course the water has to be renewed every day or so; and if you just forget it one time (they must always be watching!) they will strip every leaf from your rose bush that night, without fail.

At the end of the dry season, when the first heavy rains come, the tanajuras, or migratory queens, make their appearance. Hundreds may come from one large colony of sauvas. These have a large quantity of food stored in their bodies, in a form to be absorbed and used while the new colony is getting under way, and are therefore large and heavy, and sluggish in flight, sometimes becoming almost as large as a bumblebee. These are choice articles of food, and birds, animals, and even humans run avidly after them. Children catch them in large numbers, pulling their heads off, and putting them in cans, or other vessels to take home, or eating them raw on the spot. After removing the wings, they may be fried in butter, and are not bad, though to one not accustomed to them they leave a slightly unpleasant taste in the mouth. The outside shells of them are slightly disagreeable in the mouth, also. The tanajura that manages to escape all her pursuers lands in some convenient field, bites off her wings, and proceeds to dig a hole, and set about the establishment of a new colony.

Another ant that I always found interesting is one that is seen often in the rainy season, marching in a column four or five wide, and extending as far as I have ever been able to follow one, that is, until the line is finally lost among bushes or other obstacles. I have repeatedly followed the line in both directions, without ever finding out whence they came, or whither they went. It is a black ant, about three eighths of an inch in length. I have kept a column in sight for an hour or more, as they marched rapidly, and there must have been hundreds of thousands of them. If an obstacle is put in their way, to obstruct the march, they are perturbed, and try to reestablish the column; but they don't get vicious and try to bite or sting. I asked people the name, and they told me that it was the formiga da roça (field ant), but Figueiredo's dictionary defines formiga da roça as the same as sauva, which this certainly is not, so that the name may have been misapplied. I have also been told that these ants attack and destroy the colonies of sauvas, but of this I have seen no proof. The appearance of these ants is said to be a sign of rain.

Many other ants there are, none more vicious or potent for its size (and few irrespective of size) than the tiny ants that appear in the yards and fields in the rainy season, whose nest may be detected by an irregular mass of fine dirt particles spread over a square foot or more of ground. On being disturbed, as by stepping in their nest, they rush out in great numbers, and bite or sting with the utmost ferocity.

Children especially are greatly troubled by these ants, but field workers are careful to show them proper respect. The sarará is a large brown ant that is often found in the sugar bin. They are a great curse to bee-keepers, sometimes even causing a colony of bees to abandon the hive. Because of them the hives are often set on legs which are placed in carqueiros.

But perhaps the most striking of all is the formigão, a huge black ant, more than an inch in length, and which stands high off the ground on long legs. While they live in colonies, they are generally seen single. They are so tough that they are not at all disturbed by being stepped on by a man with shoes on, and even if you turn yourself about on the formigão to try to grind him into the earth, unless the ground is absolutely stone hard he will generally get up, untangle his legs, and go on about

his business. The formigão is equipped with a pair of powerful jaws, and a sting equal to that of a wasp; but he is inoffensive, and bothers nobody if left alone. However, he is the dread of barefoot children, who frequently step on them involuntarily, with painful results.

Cupim -- termites -- are not ants, though often thought to be by the layman. Their habits and destructive powers have often been described, and are already painfully familiar to many of us. But the North American can hardly conceive of the profusion of these insects in tropical America. They are everywhere, and one must be on the watch constantly, as their damage is done so quickly. A valuable set of books belonging to a friend of mine was almost ruined in a short time. A trunk left in an attic or storeroom, the beams of the house, not only in the basement, but even the rafters may be attacked. Even the furniture is not exempt. The universality of this insect may perhaps best be illustrated by the current anecdote of the man with an artificial leg who was seen scratching his ankle. Someone asked him if it was a flea. "No," he replied; "cupim".